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IS 11691 (1986): Power Thresher, Spike Tooth Type [FAD 21: Farm Implements and Machinery]



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*Indian Standard*  
SPECIFICATION FOR  
POWER THRESHER, SPIKE TOOTH TYPE

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**INDIAN STANDARDS INSTITUTION**  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

# Indian Standard

## SPECIFICATION FOR POWER THRESHER, SPIKE TOOTH TYPE

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# *Indian Standard*

## SPECIFICATION FOR POWER THRESHER, SPIKE TOOTH TYPE

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 28 April 1986, after the draft finalized by the Harvesting and Threshing Equipment Sectional Committee had been approved by the Agricultural and Food Products Division Council.

**0.2** Manufacture and use of power thresher, spike tooth type, has increased in the country for threshing of crops such as wheat, jowar, pulses, etc, except paddy. A need was, therefore, felt for the preparation of an Indian Standard on this equipment to provide guidelines for performance, constructional and safety aspects of this thresher.

**0.3** In the preparation of this standard, assistance has been derived from the Punjab Agricultural University, Ludhiana. In this standard the performance requirement for threshing of wheat crop are only given. It is indented to include performance requirements for threshing of other crops as and when the data becomes available.

**0.4** The figure given in the standard is only for illustration and should not be considered as suggestive of any standard design.

**0.5** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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### 1. SCOPE

**1.1** This standard prescribes the material, constructional, performance and other requirements of power thresher, spike tooth type.

NOTE — Power threshers, spike tooth type are used for threshing crops, such as wheat, jowar and pulses except paddy.

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\*Rules for rounding off numerical values ( revised ).

## 2. TERMINOLOGY

**2.1** For the purpose of this standard the definitions given in IS : 6284-1985\* shall apply.

## 3. MATERIALS

**3.1** The materials used for various parts ( *see* Fig. 1 ) shall be as given in col 3 of Table 1. The material may conform to Indian Standards given in col 4 of Table 1. The material for the components shall be declared by the manufacturer.

## 4. CONSTRUCTION

**4.1 Frame** — The construction of the frame shall be rigid and strong.

**4.2 Transport Wheel** — The minimum diameter of the wheel shall be 350 mm and its minimum width shall be 60 mm.

**4.3 Threshing Cylinder Cover** — Projecting portion of cylinder cover shall be rigidly fixed preferably by using rivets laterally and radially.

**4.4 Spikes** — Spikes shall be braced or rigidly fixed to the cylinder depending upon whether round rods or unthreaded square bars are used. Whenever spikes are attached to the cylinder by means of fasteners, spring washer shall be used.

**4.5 Feeding Systems** — Feeding systems in the thresher shall be of chute or hopper or conveyor. The requirement of the feeding system used in the thresher shall be as given in IS : 9129-1979†.

**4.6 Blower** — The blower may be of aspirator type.

**4.7 Sieves** — At least two sieves shall be used. Sieves shall be of easily cleanable and replaceable.

**4.8 Shaker** — The crank may be mounted on shaft and it shall be adjustable.

## 5. PERFORMANCE REQUIREMENTS

**5.1** When tested in accordance with the method given in 7.1 of IS : 6284-1985\*, the power required at no-load shall be not more than 30 percent of the rated power of the thresher.

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\*Test code for power thresher for cereals ( *second revision* ).

†Specification for technical requirements for safe feeding systems for power threshers.



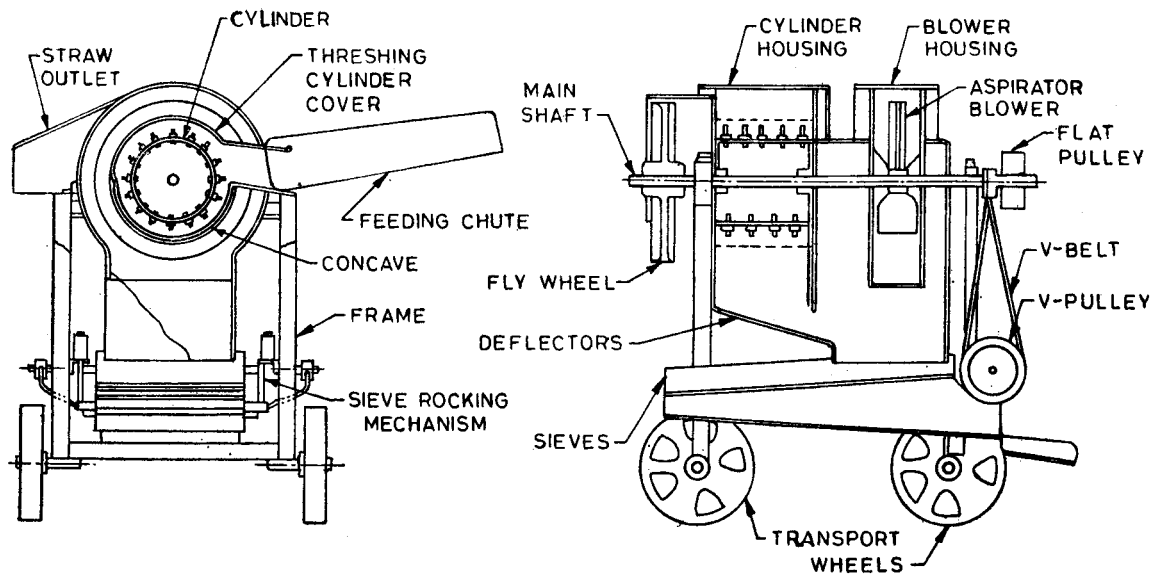


FIG. 1 SPECIFICATION FOR POWER THRESHER, SPIKE TOOTH TYPE

**TABLE 1 MATERIALS USED FOR VARIOUS PARTS OF POWER  
THRESHER, SPIKE TOOTH TYPE**

( Clause 3.1 )

SL No.	NAME OF PART	MATERIAL	REF TO INDIAN STANDARD
(1)	(2)	(3)	(4)
i)	Frame	Mild Steel	IS : 226-1975* IS : 1977-1975†
ii)	Shaft		
iii)	Concave		
iv)	Threshing cylinder cover		
v)	Blower		
vi)	Sieve		
vii)	Fly wheel	Cast iron	IS : 210-1978‡
viii)	Pulley	Cast iron	IS : 210-1978‡
ix)	Brackets	Mild steel	IS : 226-1975* IS : 1977-1975†
x)	Transport wheel	{ Cast iron Mild steel	IS : 210-1978‡ IS : 226-1975*
xi)	Spike	{ Rubber Carbon steel Mild steel	IS : 1977-1975† IS : 2591-1969§ IS : 226-1975*
xii)	Threshing cylinder	{ Mild steel Cast steel Cast iron	IS : 226-1975* IS : 1977-1975† IS : 9731-1980   IS : 210-1978‡

\*Specification for structural steel ( standard quality ) ( *fifth revision* ).

†Specification for structural steel ( ordinary quality ) ( *second revision* ).

‡Specification for grey iron castings ( *third revision* ).

§Dimensions for hot rolled steel bars for threaded components ( *second revision* ).

||Specification for steel castings for general engineering purposes.

**5.1.1** During the no-load run, the following observations shall not occur.

- Presence of any marked oscillation during operation,
- Presence of undue knocking or rattling sound,
- Frequent slippage of belts,
- Non-smooth running of shafts in their respective bearings,
- Any marked unusual wear or slackness in any components,
- Any marked rise in bearing temperature,
- Vibration in blower running, and
- Any development of crack in welded or fabricated components.

**5.2** When tested in accordance with the method given in **8.1** of IS : 6284-1985\*, the thresher shall meet the following requirements for wheat crop.

- a) The optimum input capacity shall be not less than 85 kg of wheat crop per kWh of energy consumed,
- b) The threshing efficiency shall be not less than 99 percent,
- c) The cleaning efficiency shall be not less than 98 percent, and
- d) The total losses shall not exceed 3 percent. The total cracked grain shall be not more than 2 percent.

**5.2.1** During and after the test for **5.2**, the following visual observations shall not occur:

- a) Observations given in **5.1.1**,
- b) Frequent clogging of threshing unit,
- c) Frequent clogging of sieve apertures,
- d) Non-smooth flowing of material through different components,
- e) Frequent clogging of grain in elevator unit, and
- f) Frequent loosening of fasteners.

**5.3** When tested in accordance with **8.2** of IS : 6284-1985\* no break-downs shall occur in the working components like feeding unit, threshing unit, cleaning unit, elevating unit, body, etc.

## 6. OTHER REQUIREMENTS

**6.1** The thresher shall meet the requirements given in **4** ( except **4.17** ) and **5** of IS : 9020-1979†.

## 7. MARKING AND PACKING

**7.1 Marking** — Marking on the threshers shall be done in accordance with IS : 10618-1983‡ and **7.1** and **7.2** of IS : 9020-1979†.

**7.1.1** Power thresher may also be marked with the ISI Certification Mark.

**NOTE** — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution ( Certification Marks ) Act, and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

\*Test code for power thresher for cereals ( *second revision* ).

†General and safety requirements for power threshers.

‡Pictorial representation for cautionary notices for power threshers.

**7.2 Packing** — The packing of the power thresher or its different assemblies shall be done in accordance with the agreement between the purchaser and the supplier.

## **8. SAMPLING AND TESTS**

**8.1** At least one thresher of a production model of each power rating shall be tested under type testing for all the requirements of this specification.

**8.2** Each thresher shall be tested under routine testing for the following:

- a) Requirements given under **5.1**, **5.1.1** and **7.1**,
- b) Dimensional measurements of the characteristics given under **4** to **14** of Appendix A of IS : 6284-1985\* and comparing the values with those which were obtained for the thresher, type tested.

**8.3** Unless otherwise agreed to between the purchaser and the supplier, the sampling of power threshers for lot acceptance shall be done in accordance with **3** of IS : 7201-1974†.

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\*Test code for power thresher for cereals ( *second revision* ).

†Methods for sampling of agricultural machinery and tractors.